Issues and Options for Benchmark Development

Peter Erickson

Stockholm Environment Institute – US, Seattle

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Overview

- Key benchmark design decisions
- Other issues
- Path forward

Key Design Decisions

- **Ambition** – average, best available, top percentile?
- **Scope and boundaries** – direct only or total, including indirect?

Benchmark = Emissions / Unit of Output

- **Level of aggregation**: Balance between aggregation & specificity
- **Data** sources

All facets influenced by benchmark application

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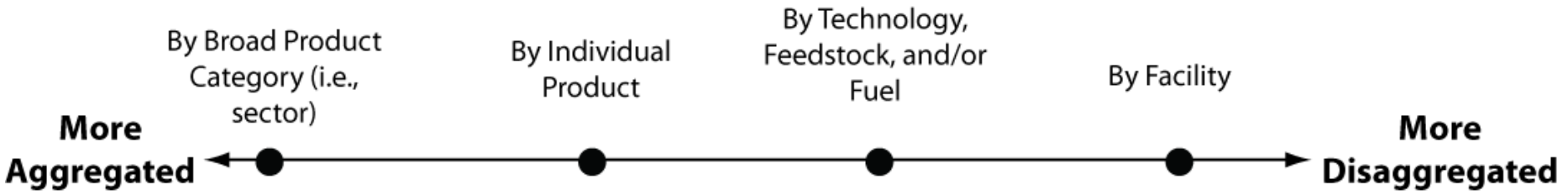
Sample Levels of Aggregation



Aluminum	Cast aluminum, rolled aluminum	Anode type	e.g., Intalco, Ferndale
Cement	Clinker (white or grey)	Wet vs. dry kiln	e.g., Ash Grove Cement, Seattle
Glass	Flat, container, fiber glass	Fraction of recycled cullet used	e.g., Cardinal Glass, Winlock
Paper	Newsprint, writing paper, market pulp	Mechanical versus chemical pulp	e.g., Norpac, Longview
Steel	High-alloy steel, hot-rolled steel, EAF steel	EAF vs. BOF, integrated versus rolling mill	e.g., Nucor Steel, Seattle

Level of Aggregation

- Need balance between:
  - **Specificity**: enables meaningful comparisons across facilities; and
  - **Aggregation**: enables broad application, provides big enough pool for benchmark to provide incentive effect
- Benefits and challenges exist for each level of aggregation

Benefits and Challenges of Aggregation

- Broad product category
  - Benefits: Simplicity
  - Challenges: Intermediate products
- Product-specific
  - Benefits: Rewards top-performers, provides long-term incentive
  - Challenges: Data, defining products
- Facility-specific
  - Benefits: recognizes site-specifics
  - Challenges: Limited incentive for best performance

Aggregation Depends on Policy Context!

- **Cap-and-trade:**
  - Intent of output-based allocation is to avoid carbon leakage while retaining CO_2 price signal
  - Some level of aggregation may be okay (e.g., "one product, one benchmark")
- **Regulatory**
  - Benchmark directly determines level of emissions and plant viability
  - Differentiation / disaggregation may be appropriate
- **Voluntary**
  - Differentiated benchmarks may encourage participation

Data Sources

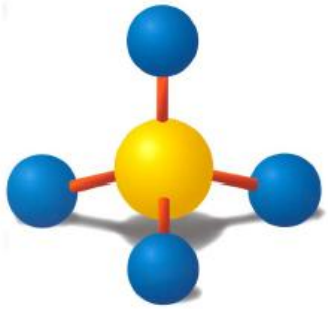
- Four types
  - Industry groups and associations
  - Government surveys
  - Air permits
  - Mandatory GHG reporting rules
- Need for improved data is widely recognized
- Consistent, rigorous protocols should be applied equally for benchmark construction and application

Data: Industry Sources

International Aluminium Institute

Results of the 2008 Anode Effect Survey

Report on the Aluminium Industry's Global Perfluorocarbon Gases Emissions Reduction Programme



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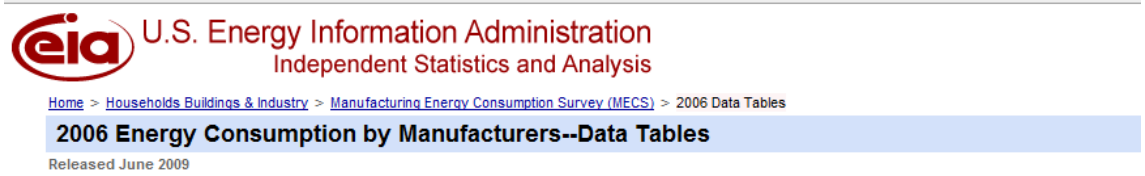
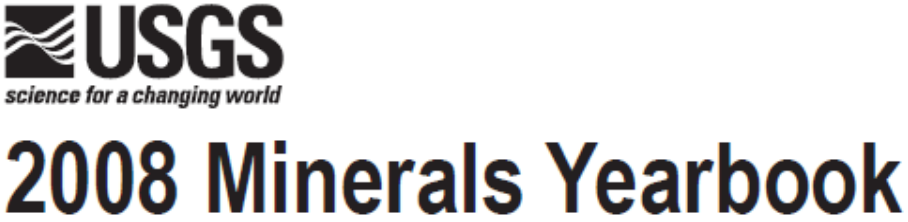
Data: Government Surveys

- MECS



- Census

- USGS



Each source has only a piece of the puzzle

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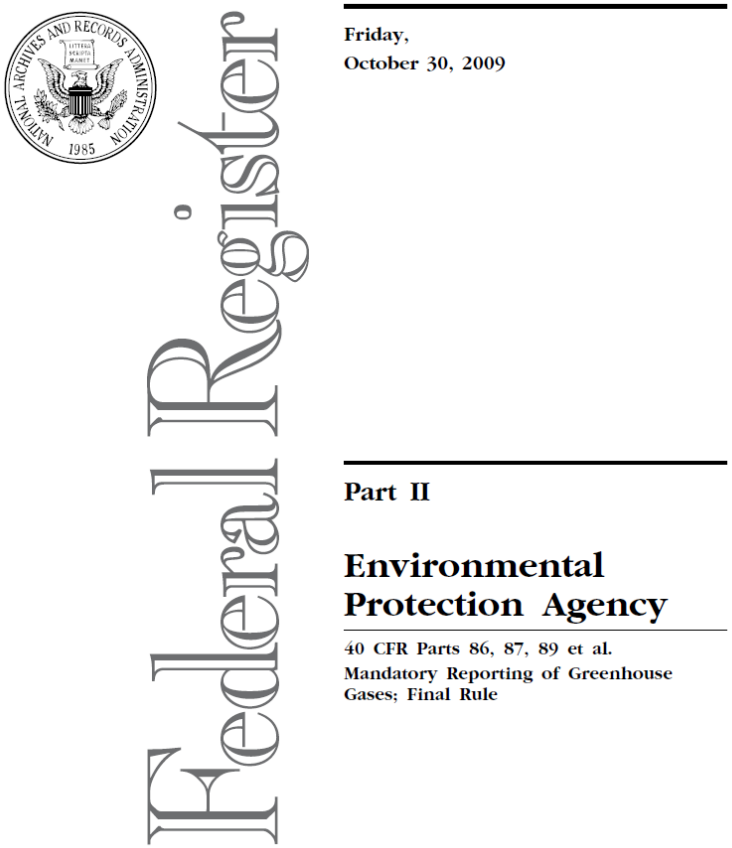
Data: Air Permits

- Some air agencies use permit data to estimate GHGs
- Ecology and local air agencies use permit information on facility production and other data to estimate GHGs
- Large number of disparate data sources complicates use

Data: GHG Reporting Rules

- All facilities in some sectors
  - E.g., aluminum, cement
- Most sectors if:
  - > 25,000 tCO2e nationally
  - > 10,000 tCO2e in Washington State
- Data due Oct 2010 in WA State, March 2011 nationally



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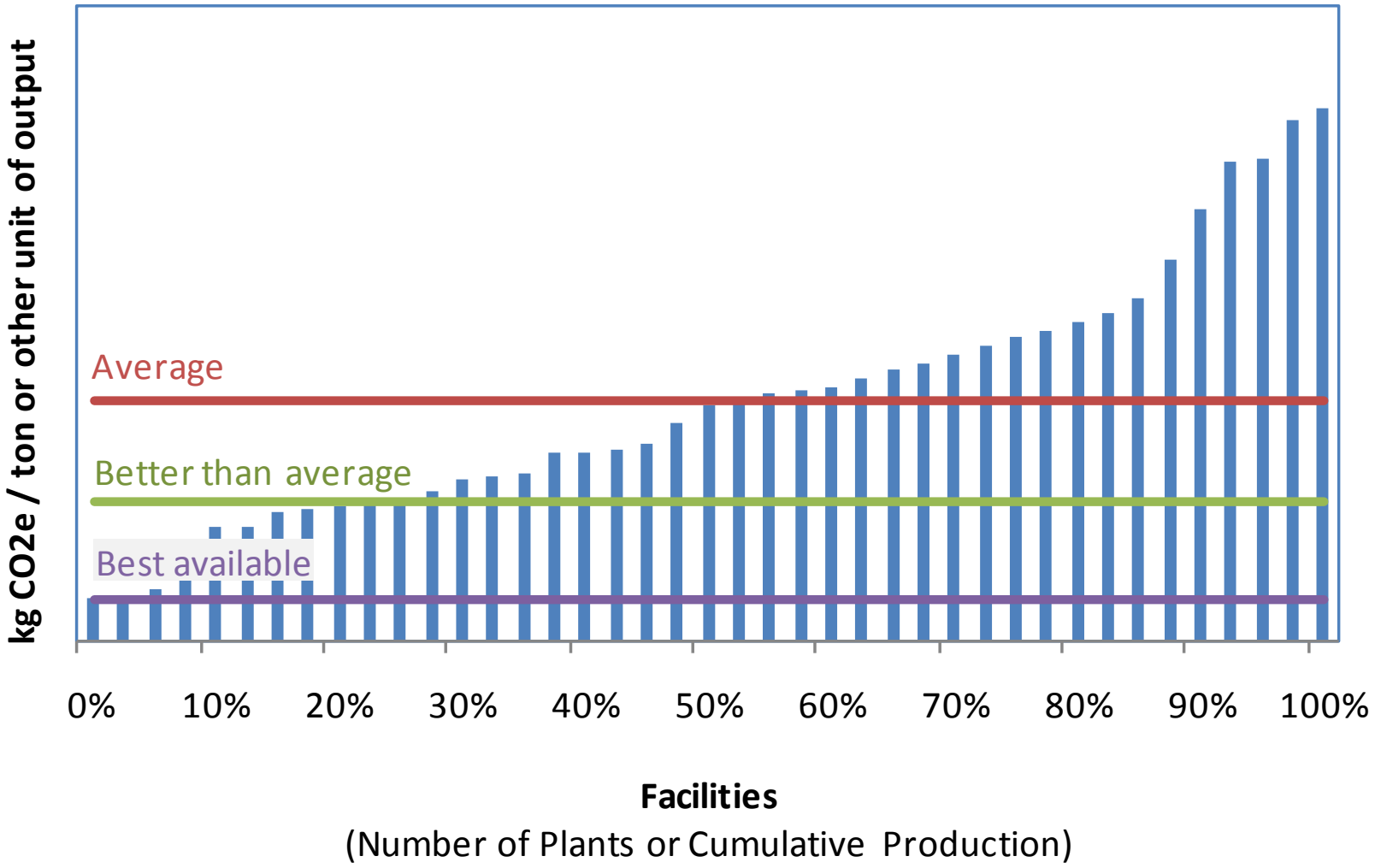
Benchmark Ambition



Ambition Depends on Policy Context, Too!

- **Cap-and-trade:**
  - What level of output-based rebate appropriate to address leakage and competitiveness?
  - Average industry performance (as in draft US legislation) or best practices (as in EU's top 10%)?
  - Insights from economic modeling (e.g., US Interagency Report on Competitiveness and Leakage)
- **Regulatory**
  - Benchmark sets allowable emissions level and may determine plant viability
  - More ambitious benchmarks where abatement less expensive?
- **Voluntary**
  - Differentiation of benchmark ambition can help distribute costs across sectors

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Ambition in Washington State

- Governor Gregoire's Executive Order 09-05 calls for benchmarks developed by the Department of Ecology to "be based on industry best practices, reflecting emission levels from highly efficient, lower emitting facilities in each industry sector."

Scope / Boundaries

- Direct emissions only
  - Benefits: Simpler, aligns best with cap-and-trade and reporting rules
  - Challenges: Could encourage "leakage", if it induces switching from fuel use to purchased electricity or steam
- All (including indirect) emissions:
  - Benefits: Includes more emission-causing activities over which facilities have control (e.g. electricity use); captures emission impact of switching to/from electricity
  - Challenges: Data needs and complexity
- Considerations for Scope also vary by policy approach

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Other Issues

- **Combined heat and power**, or use of waste gases (paper and pulp, steel, and others)
- **Feedstock quality and quantity**: Use and quality of recovered/recycled feedstock (glass, aluminum, steel)
- **Facilities that produce multiple products** (paper or steel mills)
- **Integrated vs. non-integrated facilities** (paper and pulp and steel)
- **Alternative definitions of the final product** (e.g. cement or clinker)

Potential Elements of a Path Forward on Benchmarking

- Build Data Sets
  - GHG Reporting rules
  - Industry partnerships
  - Federal – State partnerships for MECS, Census, other data?
- Pick one or more policy contexts for further benchmark analysis/development
  - Disaggregation, Ambition, Scope All Depend on Policy Context!
- Pilot in select sector(s)

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For more information

- Website: http://www.ecy.wa.gov/climatechange/GHGbenchmarking.htm
- Draft White Paper Comment Period through June 4
- Contact us at benchmarking.wa@sei-us.org

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